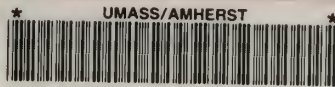


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A REVIEW OF

# WASTE MANAGEMENT STRATEGIES

AT THE UNIVERSITY OF  
MASSACHUSETTS AMHERST



UNIVERSITY OF MASSACHUSETTS  
OFFICE OF WASTE MANAGEMENT  
PHYSICAL PLANT  
AMHERST, MA 01003-6710  
(413) 545-4386

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## PROGRAM MISSION

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To develop and constantly improve a waste management hierarchy which promotes source reduction, reuse, recycling, and the procurement of products containing post-consumer content recycled materials, while making landfilling the last option for the University's waste.



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# COMPREHENSIVE MATERIALS RECYCLING PROGRAMS

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The Office of Waste Management administers materials recycling systems for the following materials:

- White and colored high-grade office paper including office stationery, xerox paper, lined pad paper, envelopes, computer printout paper, manila file folders, Post-it Notes, and tab and index cards
- Low-grade paper including newspapers, magazines, glossy paper, groundwood computer printout paper, and brown paper bags
- Hard and soft cover books including textbooks, telephone books, paperbacks, and catalogs
- Glass, aluminum, tin, and plastic containers
- Corrugated cardboard
- Scrap metal including light and heavy iron and steel, brass, copper, aluminum, stainless steel, electric motors, lead, steel drums, insulated wire, and electrical ballasts
- Miscellaneous types of batteries including lead acid (solid and wet), nickel cadmium (solid, wet, potassium hydroxide), lithium, mercury, silver oxide, nickel metal hydride, carbon zinc
- Wood waste
- Concrete demolition debris
- Used bituminous concrete
- Tires
- Electronic equipment
- Chlorofluorocarbon (CFC) and hydro-chlorofluorocarbon (HCFC) refrigerants

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# MAJOR WASTE MANAGEMENT SERVICES

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## WOOD PALLETS AND WOOD WASTE RECYCLING

A new procedure giving away free, to anyone who signs a release, old wood pallets, scrap wood waste from campus maintenance and repair operations, old cord wood, and any other clean wood waste reduces disposal costs, reuses the material, and fosters goodwill with the local community.

## COAL CINDERS RECYCLING

A new procedure giving away free, to anyone who signs a release, bottom ash (coal cinders) from the University's Power Plant reduces disposal costs, reuses the material, and fosters goodwill with the local community.

## CONFIDENTIAL MATERIAL PROCESSING

The collection, shredding, and recycling of confidential documents on campus ensures confidentiality and reduces waste disposal expenses.

## NON-RECYCLABLE TRASH COLLECTION

Management of the collection of all non-recyclable trash from all University buildings maximizes recycling rates and minimizes waste disposal expenses.







### **ELECTRONIC EQUIPMENT DEMANUFACTURING SYSTEM**

An electronic equipment disassembly, processing, and recycling system at the UMass Intermediate Processing Facility, designed in cooperation with Electronics Processing Associates, Inc., creates new jobs, recycles various components of electronic equipment (circuit boards, steel, aluminum, plastic, power supplies, cathode ray tubes, fans, gold, silver, yokes, insulated copper wire, and transformers), generates revenue from the sale of the recycled components, creates new markets for materials not currently recycled, reduces waste disposal expenses, provides a service to local municipalities, schools, and other organizations, and complies with current and pending Massachusetts DEP and U.S. EPA regulations concerning the safe disposal of heavy metals. One of the first of its kind on an American university campus, the program is expected to become a national model.

### **UNIVERSITY FLYASH DISPOSAL**

Management of the University power plant's coal-fired boiler flyash disposal program ensures compliance with Mass. DEP regulations.

### **UNIVERSITY ASBESTOS DISPOSAL**

Management of the University's asbestos disposal program ensures compliance with Mass. DEP regulations.

### **WASTE OIL RECYCLING**

Management of the collection and recycling of waste motor oil from engine oil changes performed at the Physical Plant Transportation Services Area, Small Engine Shop, and Research and Production Services at Tillson Farm ensures compliance with Mass. DEP regulations and minimizes recycling expenses.

## LEAF AND YARD WASTE COMPOSTING

A new leaf, greenhouse, and yard waste composting site on campus, approved by the Mass. DEP, reduces landfill disposal expenses, composts organic waste, provides a soil amendment for use in Physical Plant Grounds Department projects, and reduces Grounds Department expenses for the purchase of new topsoil.

## WASTE DISPOSAL AT OFF-CAMPUS UNIVERSITY SITES

Waste disposal programs at the University's Experiment Stations in Wareham, Ashland, Waltham, and Gloucester maximize recycling rates and minimize waste disposal expenses.

## USED BITUMINOUS CONCRETE AND CONCRETE DEMOLITION DEBRIS RECYCLING

Used bituminous concrete and concrete demolition debris recycling programs efficiently recycle these difficult materials and reduce waste disposal expenses.

## SALE OF SURPLUS UNIVERSITY VEHICLES

The sale or transfer of old cars, trucks, bulldozers, trailers, and other obsolete or surplus equipment on campus provides additional usable space for campus departments, improves the appearance of campus grounds, and facilitates the recycling or reuse of this equipment.

## CFC AND HCFC REFRIGERANT RECYCLING

Developed in cooperation with the University's Department of Environmental Health and Safety, a CFC and HCFC refrigerant reclamation and recycling program ensures compliance with Mass. DEP and U.S. EPA regulations and effectively reuses or recycles these ozone-depleting materials.

## MULLINS CENTER WASTE MANAGEMENT

A comprehensive waste management program designed for Ogden Entertainment Services, the management firm for the 10,000-seat, \$52-million Mullins Center, reduces waste disposal expenses, recycles valuable natural resources, tests new convocation center waste management systems, and promotes public/private partnerships.

## HOUSING SERVICES RECYCLING PROGRAM

The Housing Services Recycling Program, in conjunction with the Office of Waste Management, uses student employees to educate the 10,000 residents in the University's forty-one residence halls and two apartment complexes about recycling and to monitor the program's effectiveness.

## DONATIONS OF SURPLUS MATERIALS

Coordinating the sale or transfer of ownership of surplus and obsolete equipment to charitable organizations, schools, municipalities and other entities reduces waste disposal expenses and facilitates the reuse of these materials — including obsolete computer printout paper, computers, paint colors, elevator cables, clothing, classroom trailers, coaxial cable, sheet metal break, old bleachers, and furniture.

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## MAJOR ACTIVITIES

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Waste Management develops and coordinates various activities to reduce landfill disposal expenses, donate surplus materials to charitable organizations, and promote reuse wherever possible. Major accomplishments include:

### SALVAGE YARD CLEANUP

The cleanup of over 1.2 million pounds of scrap metal, and significant quantities of other recyclables and trash, at the University's former salvage yard generated revenue from the sale of scrap and eliminated a management problem through design of a new system to recycle scrap metal formerly stored at the yard.

### LASHAWAY HOUSE DEMOLITION

A joint effort with the South Deerfield (Mass.) Fire Department and the University's Environmental Health and Safety Department to burn an old residence at the University's dairy farm in South Deerfield under controlled conditions provided live fire training for local fire departments, saved the University \$12,000 in demolition expenses, and fostered town/gown relations.

### RUBBERMAID COMMERCIAL PRODUCTS/ WARING COMMERCIAL EQUIPMENT DEVELOPMENT PROGRAM

A cooperative program with Rubbermaid Commercial Products and Waring Commercial tested compacting and materials handling systems for aluminum, tin, and plastic food service containers to improve University recycling systems and provide data for use in the development of other food service recycling programs.

### OUTDOOR CAMPUS TRASH CONTAINERS

New outdoor Rubbermaid Landmark trash collection containers improve the appearance of campus grounds, are easier for Grounds Department staff to empty, and reduce litter collection expenses.

### USED TIRE STORAGE AREA CLEANUP

The recycling of over 45 tons of used tires stored on campus saved approximately \$20,000 in disposal costs and recycled valuable natural resources.

### RECYCLED PAPER TASK FORCE

A task force set up jointly with the University's Administrative Services, and comprised of representatives from numerous campus departments, promotes the procurement of post-consumer content recycled paper on campus. (In the near future all University letterhead and envelopes will be printed on paper containing post-consumer content recycled materials.)

### NATIONAL RECYCLING COALITION 11TH ANNUAL CONGRESS AND EXPOSITION RECYCLING SYSTEM

In cooperation with representatives from Rubbermaid Commercial Products, Inc. and other organizations, the Office of Waste Management designed, implemented, and coordinated the recycling systems used at the NRC 11th Annual Congress and Exposition, held at the Hynes Auditorium in Boston in September 1992.





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## INTERMEDIATE PROCESSING FACILITY DESIGN AND CONSTRUCTION

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Coordination of funding, design, and construction led to the completion of the University's \$1,000,000 Intermediate Processing Facility, a state-of-the-art central processing and transfer facility for recyclable materials. The largest of its kind on an American university campus, it features:

- seven indoor and three outdoor roll-off container bays
- a 70-foot long, 135-ton capacity digital load cell truck scale
- 13,000 square feet of indoor storage and processing areas
- plastics granulating equipment
- sorting and materials handling conveyors
- an electronic equipment demanufacturing system

The IPF provides a community service by: acting as a regional recyclables processing facility; accepting materials from numerous off-campus organizations; generating revenue to support the continued improvement and expansion of the waste management program, producing post-consumer recycled materials which can be used as feed-stock for existing and new businesses; and promoting economic development by creating new jobs. The return on the University's investment based on avoided landfill disposal fees and fines is approximately four years.



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# RECYCLING COLLECTION TRUCK DESIGN

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An innovative recycling collection truck was designed in conjunction with National Recycling, a recycling body manufacturer in Rhode Island, Bayne Machine Works, Inc., a cart dumper manufacturer in South Carolina, and Rubbermaid Commercial Products, Inc., a recycling collection container manufacturer in Virginia. This automated, state-of-the-art recycling truck features:

- an aluminum recycling body for low maintenance and fuel efficiency
- a low-profile Ford cab-over chassis for efficient loading and easy maneuverability around University buildings
- rear vision video allowing a single operator to back up safely in highly populated areas of campus
- an automated vertical cart dumper with adapter which dumps both Toter, Inc. semi-automated carts and Rubbermaid, Inc. Square Brute Containers
- 31 cubic yard capacity

This custom-designed recycling truck has drastically reduced collection times and operating expenses, and improved program efficiency, and will revolutionize the way materials are collected in similar programs.



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## MANAGEMENT OF THE UNIVERSITY'S HAZARDOUS WASTE DISPOSAL BUDGET

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A new pilot program, developed with the University's Department of Environmental Health and Safety, purchased Scotlab's SafeTray system (which uses a base tray and tray liners made from high density PVC plastic) to reduce the generation of low-level hazardous waste in University labs and lower hazardous waste disposal costs.

A new program, developed with the University's Environmental Health and Safety Department, uses graduate students in chemistry to perform hazardous waste unknowns testing, classification, and bulking to reduce hazardous waste disposal costs.

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## PROCUREMENT

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Procurement of products made with post-consumer content recycled materials including paper, bicycle racks, park benches, landscape timbers, plastic lumber, and paint is being promoted.

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## COMMUNITY SUPPORT

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### SMALL BUSINESS RECYCLING PILOT PROGRAM

A small business recycling program for downtown Amherst businesses helps them to reduce waste disposal expenses, save valuable landfill space, and recycle valuable natural resources. The model program also fosters town/gown relations and public/private partnerships.



## LEAGUE OF WOMEN VOTERS ANNUAL BOOK SALE

Book recycling services for hundreds of books which are in poor condition or are not sold saves valuable landfill space, recycles valuable natural resources, and fosters town/gown relations.

## INSTITUTE OF TRAINING AND DEVELOPMENT

Tours of the University's comprehensive waste management facilities for participants in international study and exchange programs promote reciprocal sharing of valuable waste management experiences and foster public/private partnerships.

## INTERMEDIATE PROCESSING FACILITY TOURS

Regular tours given to campus departments and off-campus organizations including local public schools, the Girl Scouts, local solid waste management districts, public works departments, and other universities promote economically viable and environmentally sound waste management practices.

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## GRANTS

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### ANDREW W. MELLON FOUNDATION GRANT

A joint \$40,000 grant program with recycling programs from Amherst, Smith, Hampshire, and Mount Holyoke colleges, and Five Colleges, Inc. funds the position of the Five Colleges Recycling Coordinator, who is based in the University's Intermediate Processing Facility and coordinates cooperative recycling and waste management activities in the Five College system to reduce waste and increase recycling rates.

### WAL-MART STORES, INC.

A \$48,000 grant is being used to purchase more efficient recycling processing equipment.

### NABISCO BRANDS, INC.

Fifteen surplus conveyors, formerly used to handle cereal and crackers at Nabisco Brands, Inc. pilot plant in Fair Lawn, New Jersey are being modified by University staff to now handle recyclable materials in the University's Intermediate Processing Facility.

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## FUTURE GOALS

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- Recycle 50% of the University's total waste stream by FY95.
- Promote source reduction.
- Promote the procurement of products made with post-consumer content recycled materials campuswide.
- Provide individual recycling containers for all University staff.
- Recycle additional types of materials on campus.
- Provide increased support to local private, school, college, and municipal waste management programs.
- Create additional employment opportunities at the University's Intermediate Processing Facility by recycling more materials through the facility.





FOR MORE INFORMATION OR A TOUR OF OUR FACILITIES, CONTACT:

The Office of Waste Management  
Physical Plant  
University of Massachusetts  
Box 36710, Amherst, MA 01003-6710  
Tel. (413) 545-4386  
FAX (413) 545-0729.

